

Amendment to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1 1. (currently amended) A method for high spatial resolution imaging of x-ray and gamma
2 radiation sources comprising:

3
4 a) determining the required resolution:

5
6 a b) supplying a plurality of sources of radiation; and

7
8 b c) supplying an aperture downstream from each source, said aperture having a width
9 approximately equal to the required resolution;

10
11 c d) focussing said radiation onto one or more detector assemblies detectors by means
12 of diffracting crystals having a width not exceeding the required resolution;

13
14 d e) analyzing said focused radiation to collect data as to the type and location of the
15 radiation source; and

16
17 e f) producing an image using the data.

1 2. (original) The method as recited in claim 1 wherein the step of supplying said sources
2 of radiation further comprises contacting a body with a radioisotope.

1 3. (original) The method as recited in claim 1 wherein said image is produced by an array
2 of detectors.

1 4. (currently amended) The method as recited in claim 1 ~~wherein the step of arranging said~~
2 ~~crystals further comprises~~ comprising cutting said crystals into thin slabs and bending said
3 cut crystals to assume the shape of circular arcs.

1 5. (original) The method as recited in claim 1 wherein said width is 1mm or less.

1 6. (currently amended) The method as recited in claim 1 further comprising selecting said
2 crystals to have random imperfections and dislocations that produce a rocking angle of
3 between 50 and 150 seconds of arc.

1 7. (currently amended) The method as recited in claim 1 wherein the step of analyzing said
2 focused radiation further comprises directing said focused radiation to a plurality of
3 detectors of a size equal to or smaller than the required resolution ~~with a resolution of 1~~
4 ~~mm or less.~~

1 8. (currently amended) The method as recited in claim 1 further comprising positioning one
2 or more collimators with ~~narrow width apertures~~ smaller than the required resolution
3 ~~between in front of said sources and said detectors and adjusting the position and widths~~
4 width of said apertures to improve said resolution imaging.

1 9. (original) The method as recited in claim 4 wherein the step of supplying a plurality of
2 said sources of radiation further comprises placing at least one of said
3 sources at precisely known locations.

1 10. (currently amended) A device for providing pre-determined high spatial resolution
2 imaging of a plurality of sources of x-ray and gamma-ray radiation, the device comprising:

3
4 a) a means for locating the sources of radiation;

5
6 b) a plurality of diffracting crystals of a width not exceeding the pre-determined resolution
7 for focussing the radiation emanating from the located sources and directing it the radiation
8 to a plurality of detectors, with the size of each said detector equal to or smaller than the
9 resolution;

10
11 c) detector arrays for analyzing said the directed radiation to collect data as to the type
12 and location of the source of radiation; and

13
14 d) a means for converting the data to an image.

1 11. (original) The device as recited in claim 10 wherein the means for locating the sources
2 is a plurality of scintillation devices.

1 12. (original) The device as recited in claim 10 wherein the diffracting crystals form a
2 plurality of lenses.

1 13. (currently amended) The device as recited in claim 10, ~~where~~ wherein the diffracting
2 crystals and the sources are movable.

1 14. (original) The device as recited in claim 10 wherein the radiation sources are
2 radioisotopes.

1 15. (currently amended) The device as recited in claim 12 wherein each lens comprises
2 a plurality of crystals and wherein the said plurality of crystals are oriented so as to diffract
3 radiation of a predetermined energy to the same focal point.

1 16. (original) The device as recited in claim 12 wherein the crystals are mounted in
2 concentric rings onto a substrate.

1 17. (original) The device as recited in claim 12 wherein the crystals are bent.

1 18. (currently amended)The device as recited in claim 10 further comprising one or more
2 collimators with apertures positioned medially between the sources and the detectors and
3 wherein the width and position of said apertures is are adjustable to improve said
4 resolution.

1 19. (original) The device as recited in claim 10 wherein said crystals contain random
2 imperfections and dislocations that produce a rocking angle of between 50 and 150
3 seconds of arc.

1 20. (currently amended)The device as recited in claim 10 wherein said detectors in said
2 detector arrays comprising said plurality of detectors have a resolution of 1 mm or less.